

Applicant: Kaewell, Jr. et al.
Application No.: 09/356,845

Applicants respectfully disagree. By this Reply, claims 11, 15 and 19 were revised.

Attached is a version of the revised claims indicating annotations.

The present invention uses a totally different approach to achieve the synchronization between a primary station and a subscriber. First, during the synchronizing process, in our present invention, the subscriber utilizes a 25% duty cycle waveform and a distinct type of receive automatic gain control (AGC) to track the positive edge of the receiving amplitude signals from the primary station, and successively aligns its transmitting frame timing with the primary station's frame timing. On the contrary, in the '581 patent, the time reference of the primary station, the spacecraft, has to be used as the time reference of the subscriber, the primary station "detects the occurrence of the coarse synchronization signal transition and measures the time interval between the transition occurrence and the next downlink start-of-frame[.]" to calculate the incremental delay measurement for the particular subscriber (Column 6, line 37-41). Later, the incremental delay measured by the primary station will be downloaded to the particular subscriber whose uplink frame timing will depend on the primary station's timing measurement. Therefore, the subscriber of our invention has built-in mechanism to detect the right frame timing itself, while the subscriber of the '581 patent relays on its primary station providing frame timing information. Second, the '581 patent uses a two-stage synchronization process before voice or other data can be transmitted

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between the primary station and the subscriber. At the first stage, both wideband downlink of the primary station and the narrowband uplink of the subscriber are required to achieve a coarse synchronization between them; at the next stage, the wideband downlink of the primary station and wideband uplink of the subscriber are needed to establish fine synchronization. The primary station must continue to perform a fine synchronization maintenance function to the subscriber for the communication of voice, other data and subsequent fine synchronization (Column 7, lines 18-25).

Furthermore, the '581 patent uses a relatively high signal-to-noise ratio to assure the detection of the coarse sync signal with enough precision to eliminate the need for a statistical average process (Column 6, lines 44-60).

The fine synchronization stage will not start unless the digitized coarse sync error measurement and an uplink time slot assignment to the subscriber is received by the designated subscriber (Figures 8 and 30). Our invention only requires the establish of coarse synchronization, a one-stage synchronization process, between the primary station and the subscriber before the voice or other data is ready to be transmitted. Furthermore, our present invention does not use a coarse sync error measurement to guarantee valid signal transmissions as the '581 patent does.

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The amended independent claims 11, 15 and 19 have important distinguishable elements which the '581 patent does not teach or disclose. For the above reasons, Applicants respectfully submit that all the claims are allowable. If the Examiner does not believe that claims are in condition for allowance, the Examiner is respectfully requested to contact the undersigned. Reconsideration and entry of this amendment is respectfully requested.

Respectfully submitted,

Kaewell, Jr. et al.

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**37 CFR §1.121(b)(1)(iii) and (c)(1)(ii) SPECIFICATION
AND CLAIM AMENDMENTS- MARKED UP VERSION**

(Thrice Amended) A telecommunication system using wireless transmissions,
the system comprising:

a primary station communicating with a plurality of stations, the primary station
including a radio having a receiver and a transmitter wherein:

5 (i) said transmitter transmits synchronization information including an
assignment of n transmission fixed periodic time slots, where n is an integer greater than 1,
and n reception fixed periodic time slots on a selected frequency;

(ii) said radio transceives a duplex telephonic communication with the
plurality of stations on the selected frequency wherein:

10 (a) said transmitter transmits TX speech information to each of the
plurality of stations in a respective one of the n transmission time slots on the selected
frequency; and

(b) said receiver receives RX speech information from each of the
plurality of stations in one of the n reception time slots on the selected frequency; and

15 the plurality of stations including:

a base station receiving from the primary station the TX speech information originated from a secondary station in said respective transmission time slot and transmitting the RX speech information in said respective reception time slot; and
the secondary station having:

- 20 (i) a radio receiver which receives the synchronization information from the primary station and identifies the assignment of time slots and which receives from the primary station the TX speech information originating from the base station in said respective transmission time slot; and
- 25 (ii) a radio transmitter which transmits the RX speech information in said respective reception time slot; and

wherein using the primary station for transmissions between the base station and secondary station is transparent to the base station and secondary station, and the primary station or the secondary station itself detects a frame timing from received signals and aligns its transmitting frame timing accordingly.

15. (Thrice Amended) A telecommunication station for communicating with a base station and a secondary station using wireless transmissions, the station comprising:

a transmitter which:

- 5 (i) transmits synchronization information including the assignment of $2n$ fixed periodic time slots, where n is an integer greater than 1, on a selected frequency, n

fixed periodic transmit time slots for transmission from said telecommunication station and
n fixed periodic reception time slots for reception by said telecommunication station; and

(ii) transmits TX information to the base station and the secondary station
on the selected frequency in respective ones of said n assigned transmit slots; and

10 a receiver which receives RX information from the base station and the secondary
station on the selected frequency in respective ones of said n assigned reception slots; and
wherein using the telecommunication station for communications between the base
station and secondary sation is transparent to the base station and secondary station, and the
primary station or the secondary station itself detects a frame timing from received signals
15 and aligns its transmitting frame timing accordingly.

19. (Thrice Amended) A telecommunication station for communicating with a
base station and a secondary station using wireless transmissions, the telecommunication
station comprising:

a transmitter which:

5 (i) transmits synchronization information including the assignment of fixed
periodic time slots on a selected frequency, at least two fixed periodic transmit time slots for
transmission from said telecommunication station and at least two fixed periodic reception
time slots for reception by said telecommunication station; and

- (ii) transmits a signal carrying information received from the base station
10 on the selected frequency in a first assigned transmit slot and carrying information received
from the secondary station on the selected frequency in a second assigned transmit slot; and
a receiver which:
- (i) receives the information transmitted from the base station on the
selected frequency in a first assigned reception slot; and
15 (ii) receives the information transmitted from the secondary station on the
selected frequency in a second assigned reception slot; and
wherein using the telecommunication station for communications between the base
station and secondary station is transparent to the base station and secondary station, and the
primary station or the secondary station itself detects a frame timing from received signals
20 and aligns its transmitting frame timing accordingly.